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A REVISION OF *STOEBE* L.

By

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The genus Stoebe was founded by Linnaeus for certain members of Compositae in which the one-flowered capitula were massed in rounded heads. He established a separate genus Seriphium, for a number of allied plants in which the capitula were either spicately arranged or scattered on the branches. He included in these genera several plants now placed in Disparago and Elytropappus.

Lessing and De Candolle retained the names Stoebe and Seriphium, but finding that the inflorescence was somewhat variable proceeded to separate the two genera on characters of the achene. Stoebe, as defined by them, had a rim or annulus outside the pappus, while this feature was absent in Seriphium. Unfortunately this character, too, proved to be variable, and Harvey realising that it was impossible to uphold the two genera sank Seriphium in Stoebe when dealing with Compositae in the Flora Capensis. Bentham and Hooker and subsequent workers have followed him.

Up to the present time the pappus has been regarded as an essential feature of the genus, and those plants which lacked a pappus have been placed in the genus Perotriche. After a careful examination of all the species of both Stoebe and Perotriche the writer has come to the con-

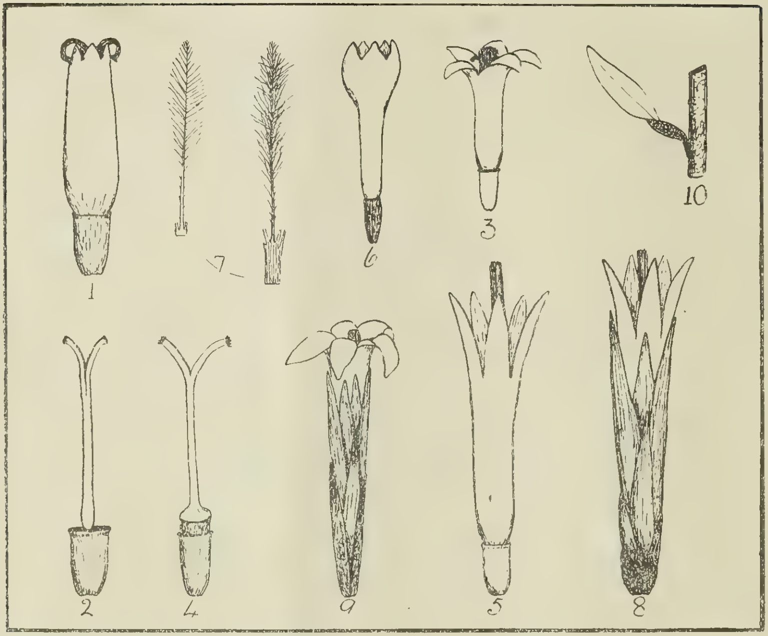

Fig. 1. *Stoebe incana.* Flower with pappus removed, ready for pollination × 12.

Fig. 2. *Stoebe incana.* Gynaeceum, the stage at which the style branches begin to emerge from the staminal tube × 12.

Fig. 3. *Stoebe prostrata.* Flower with the pappus removed, ready for pollination × 9.

Fig. 4. *Stoebe prostrata.* Gynaeceum, showing the swollen base of the style and disc × 12.

Fig. 5. *Stoebe nervigera.* Flower with pappus removed × 5.

Fig. 6. *Stoebe rosea.* Flower with pappus removed × 5.

Fig. 7. *Stoebe aethiopica* (left), *Stoebe rosea* (right). A single bristle of the pappus, showing the basal portions of adjoining bristles in each case × 10.

Fig. 8. *Stoebe nervigera.* Capitulum × 5.

Fig. 9. *Stoebe prostrata.* Capitulum × 10.

Fig. 10. *Stoebe prostrata.* Leaf × 2½.

clusion for reasons given below, that a more natural grouping of these plants is attained if the species of Perotriche be included in Stoebe. In an allied genus Disparago the pappus has been shown to be extremely variable (**5**), and species with and without a pappus have been accepted as belonging to this genus. According to Vavilov's law of homologous series in variation a specific difference occurring in one genus is likely to be repeated in a related one, and this appears to be the case here. Further support for the proposed transference of the species of Perotriche to Stoebe lies in the fact that three out of the four species have, in all respects but the pappus, their closest allies in species of Stoebe. For example, the plant at present known as *Perotriche tortilis* is so similar to *Stoebe capitata* that it is frequently assumed to be that plant until an examination has been made. The correspondence in nearly all details of structure between the two plants is so exact that it is impossible to place them far apart in any natural grouping of species. For these reasons Stoebe as defined in this paper includes forms with and without a pappus.

Basis of Classification.

The genus falls into two well-defined groups of species distinguished by the type of corolla and certain associated features. The importance of the shape of the corolla was clearly recognised by C. H. Schultz in 1861, but no previous writer had mentioned this feature. Figure 1 illustrates the first of these floral types. Here the corolla is tubular with small erect triangular lobes. The colour is usually a dull brown or purple, but may be yellow. When ready for pollination the style branches are considerably longer than the corolla and curl round outside it as shown in the figure. A further feature common to all members of this group is seen in the base of the style which may be slightly swollen but is never greatly enlarged and passes directly into the ovary (Fig. 2). This type of flower is characteristic of all the tropical species and several of the South African species. The second type of corolla is shown in Fig. 3. Here it will be noticed that the corolla lobes are relatively large and well developed, and in the open flower spread outwards The colour may be white or pink but is not purple, brown or yellow. A single exception to this rule may occasionally be found in *S. nervigera* where a purple colour has been recorded. The connectives of the anthers project from the throat of the corolla and in the majority of cases the style branches protrude from between the connectives but rarely extend outside the corolla. In most of the species of this group the style is greatly swollen at the base and in addition is seated on a waxy disc which in fresh specimens is either yellow or orange in colour (Fig. 4.) Good examples of this type are *S. capitata*, *S. fusca* and *S. aethiopica*.

S. nervigera (Fig. 5) has rather narrower lobes than typical members of this second group, but when ready for pollination the corolla lobes show a strong tendency to spread. This species obviously belong to this group as all other features are normal. In *S. gomphrenoides*, *S. microphylla* and *S. leucocephala* the corolla lobes are long and narrow and more or less erect but in other respects these plants belong to this group though they form a distinct section within it. *S. alopecuroides* differs from other members of this section in lacking the swollen style base and disc. In certain vegetative features, notably the presence of short shoots, this plant approaches some widespread members of the first group, and if that group be regarded as primitive then *S. alopecuroides* retains some ancestral features which are lost in the more highly evolved members of the second group. *S. rosea* is an exceptional species in many respects though it has more in common with the second group than the first. Fig. 6 shows the form of the corolla. The upper part of the tube widens considerably but the small incurved lobes give it a globose appearance. The waxy disc at the base of the style is absent. Another feature in which this species is unique is the pappus. In all other species the pappus, when present, is feathered the lateral branches all lying in one plane (Fig. 7). In *S. rosea* the pappus bristles which are joined at their base for a greater distance than usual, have an untidy appearance due to the giving off of the lateral branches in all directions (Fig. 7), so that each bristle has a radial symmetry.

INVOLUCRE.

In plants belonging to the first group the involucral scales are arranged in several rows. The outermost are short and leaf-like and there is a gradual transition to the long, chaffy, innermost scales. In the species found in Madagascar and Reunion the capitula are borne singly at the ends of short leafy branches and it is impossible to define the limits of the purely vegetative part of the shoot and the capitulum which terminates it. In the African species the capitula are normally grouped in heads and the limits of the capitula are discernible.

Some members of the second group have an involucre of the same type as seen in the first group. This is seen in *S. fusca* and *S. nervigera* (Fig. 8). In others, however, there is a strong tendency to eliminate the leafy bracts at the base and for all the bracts to approach one another in size and texture. For instance, in *S. prostrata* (Fig. 9) it will be seen that there are no very short green bracts though the outermost bracts still have green tips. The highest expression of this tendency is seen in

S. capitata and S. bruniades where all the bracts approach one another in size and where all have a chaffy texture.

VEGETATIVE FEATURES.

Over half the African species of the first group (including the species that extend beyond the south-western coastal belt) have their vegetative axes differentiated into long and short shoots. This feature is not present in the second group with the single exception of *S. alopecuroides* where the short shoots are very noticeable.

The leaf shows certain constant features throughout the genus. The upper surface is invariably covered with a felt-like mat of hairs. The lower surface, on the other hand, may be glabrous or hairy. There is a strong involute tendency throughout the genus, leading in many cases to an ericoid type of leaf. A completely flat leaf is rare in this genus, and some degree of twisting is a common feature. In extreme cases a spiral form is assumed, but a more frequent type is that shown in Fig. 10 where, owing to torsion in the lower part of the leaf, the morphologically lower surface is placed uppermost. Throughout this paper the terms lower and upper surfaces are used in a morphological sense.

HYBRIDISATION.

Hybridisation does not appear to occur frequently in the genus, and in this respect Stoebe presents a marked contrast to Elytropappus. However, on Table Mountain hybrids between *S. cinerea* and *S. incana* may be observed in many places. *S. cinerea* is a plant of low and moderate altitudes while *S. incana* ranges from about 1,800 feet to the summit. Their areas of distribution overlap and in this zone numerous hybrids occur. *S. cinerea* has an elongated inflorescence and short shoots are always present. *S. incana* has a rounded or oblong infloresence and short shoots are not developed. Most of the hybrids are intermediate between the parents in both of these easily discernible features.

VARIATION.

As in most large genera certain species appear to be stable while others are so variable that they defy precise definition. It is a fact of interest that in Stoebe the variable species are those with a wide distribution, viz., *S. plumosa*, *S. vulgaris*, *S. capitata* and *S. aethiopica*. As the problems presented by these species are by no means uniform each species will be considered in turn.

S. plumosa is the most widespread of all the species ranging from near Humpata in Portuguese West Africa, southwards to the Cape Peninsula and then eastwards to East London. Its altitudinal range is also considerable, extending from sea level to over 6,000 feet. At low altitudes it may be found growing in dry sand or in places that are water-logged during a considerable part of the year. The low altitude forms usually have an upright habit and grey plume-like branches, which character is suggested by the specific name *plumosa*. The lowland plants of dry habitats usually flower in the Autumn (the usual flowering period for the species of the genus as a whole) while those of moist places as far as observations go flower in the Spring. The flowering period of this species appears to be somewhat plastic as occasional plants have been found in flower at midwinter.

Forms characteristic of high altitudes are always stiffly and divaricately branched and at first sight appear very different from the soft plumose type mentioned above. However, the two types merge into one another and it is impossible to separate these forms. This species is normally somewhat woolly and the plants give a grey impression, but here and there in several localities (Malmesbury, Ceres, etc.) greenish plants with scanty wool are to be found growing with the type. These greenish plants often have a sharp mucro on the leaves of the main axis. Intermediate forms abound, however, and this type has obviously no claim to specific rank. At high altitudes a very woolly and rather coarse form has been recorded on several occasions. It is interesting to note that a related species, *S. incana*, is also prone to produce white, woolly forms at high altitudes, and the same phenomenon may be observed in Metalasia, another genus of the same alliance. The plants of this species occurring at high altitudes all appear to be Autumn flowering.

S. vulgaris, a species that is acquiring an unwelcome notoriety in the Transvaal owing to its aggressive habits in the grass-veld, appears to show a range of variation similar to that of *S. plumosa*. The stems and branches may be more or less erect or they may spread and the branching be of a divaricate type. In colour the plants range from grey to green according to the degree of woolliness, affording a close parallel with *S. plumosa* in the South. A considerable range in leaf size is encountered in this species, a form occurring on the border of Natal having leaves distinctly larger than that of the average Transvaal plant. However, even in one small area forms showing marked differences in leaf size will be encountered. The inflorescence may be freely branched or the glomerules may be much condensed, and borne close to the main axis giving a spike-like effect. In this latter type the vegetative parts show the same tendency to condensation, a phenomenon particularly common in Stoebe and allied genera.

In considering *S. vulgaris* it is impossible to resist drawing a comparison between this plant and *Elytropappus rhinocerotis* in the South. In both cases we are dealing with highly variable plants which under certain conditions have acquired aggressive features not usually encountered in plants growing in their native haunts. The case of *E. rhinocerotis* has been dealt with at length (**2**, **3**, **4**). Professor J. F. V. Phillips and Mr. C. Cohen are making an ecological study of *S. vulgaris* in the grass-veld of the Transvaal where it is indisputably spreading at an alarming rate. The methods by which these two plants set about colonisation are entirely different, but the same vigour and adaptability are marked features of both.

S. capitata contains within the species two well-defined types which before a thorough investigation in the field had been made were assumed to be distinct. The first type which is the common one on the Cape Flats is a fairly stout plant with rounded or oblong heads and pink flowers. The innermost acuminate scales of the involucre slightly exceed the corolla tube in length, and the pappus is about as long as the tube. The corolla tube is approximately 3 mm. long. The second type which was given the name of *S. Mossii* by Spencer Moore, is abundantly represented in the neighbourhood of Sir Lowry's Pass. The plants are much more slender, the heads are smaller and rounded, and the flowers white or pale pink. The acute, innermost involucral scales are about the length of the corolla tube which is about 2 mm. long, while the pappus is delicate and distinctly shorter than the tube. These features suggested that these were two distinct but related species. However, the presence of occasional herbarium specimens which were intermediate in character made it desirable to visit a locality from which such intermediates had been obtained. Hermanus was such a place and consequently the area from Sir Lowry's Pass to Hermanus was made the object of special study. From Sir Lowry's Pass to Houw Hoek the plants were remarkably uniform, all of the slender type mentioned above. From Houw Hoek to Caledon owing to an unsuitable type of soil, this species was not seen, but between Caledon and Hermanus it was present in abundance on Shaw's Mountain. At the highest point on the road over the mountain all the plants were externally similar to the Cape Flats type while at the Hermanus end of the road the plants were intermediate in character. On dissection, however it was discovered that external form was no guide to details of flower structure. Twenty plants were collected at random over a fairly wide area at the highest point of the road. All these plants had the external features of the Cape Flats type, i.e. robust habit, round or oblong heads and deep pink flowers. The results of an examination of these plants is detailed below :—

		Involucral scales.	Pappus.	Length of corolla tube.
Cape Flats type		acuminate	As long as corolla tube; bristles stiff.	3 mm.
Sir Lowry's Pass type		acute	Shorter than corolla tube; bristles delicate.	2
Plants from Shaw's Mountain	10 plants	sub-acuminate	Shorter than corolla tube; bristles intermediate.	3
	5 plants	sub-acuminate	Shorter than corolla tube; bristles delicate.	2·5
	2 plants	sub-acuminate	Shorter than corolla tube; bristles delicate.	2
	3 plants	acute	As long as corolla tube; bristles intermediate.	2

The same phenomenon was observed in plants collected nearer Hermanus, though here the aspect of the plants was almost that of the Sir Lowry's Pass type. If the areas of distribution of the two types were partially dissimilar and the intermediate forms occurred where these areas overlapped, it would seem likely that the intermediate forms could best be explained as constituting a hybrid swarm. However, the areas of distribution are similar and both types frequently occur in the same locality. For the present it seems best to accept the species as a variable one and to regard these two forms as varieties which hybridise readily.

In places where the Cape Flats type grows plentifully it will be found on examining numerous individuals that the population is far from uniform. For instance, at Pollsmoor, near Tokai, in addition to the normal form which was the most abundant, some rather grey plants were observed, due to a greater development of hairs over the whole vegetative surface. Other plants showed a general shortening of the internodes, resulting in a dwarf type.

An interesting mutation, very different in aspect from the type, which was also present, was observed in two instances among plants coming up after veld fires. These plants were obtained in two localities, one at Pollsmoor mentioned above (Levyns 5251) and the other in Klaver Valley, above Simonstown (Levyns 5523). This mutant is much stouter than the typical Cape Flats type with which it was growing in both cases. The leaves instead of being ericoid are almost flat. The general appearance is strongly suggestive of a tetraploid form but confirmation was not obtainable as in the first instance the inflorescence was too young and in the second the flowers were dead. No seed had been set in the second case, suggesting that sterility is a feature of this mutant as would probably be the case in an autotetraploid. A mutant of *Disparago lasiocarpa* (Levyns 5091), also collected on veld that had been burnt, is probably of the same nature.

In most previous accounts of this genus two related species, *S. aethiopica* L. and *S. phylicoides* Thunb. have been recognised. As far as their inflorescences and flowers are concerned no constant differences are to be observed. However, their vegetative features are very different. *S. aethiopica* is a low, much branched, densely leafy shrub. The leaves are markedly involute, almost ericoid, and have a definite twist. *S. phylicoides*, on the other hand, is a tall, straggling shrub with but occasional branches and the leaves are almost flat, straight and never crowded. Their areas of distribution are on the whole different, *S. aethiopica* being most abundant from the Cape Division to Uniondale, while *S. phylicoides* is centred in the Clanwilliam and Van Rhynsdorp Divisions. However in the southern part of the Clanwilliam Division, in the Ceres Division and on the mountain at Piquetberg forms occur which are intermediate in character between the two so-called species. A detailed study of these intermediates was made at Eland's Kloof in the North-West of the Ceres Division. These plants are a common constituent of the flora of the lower mountain slopes and are remarkably uniform in character. In all their vegetative features they lie half way between *S. aethiopica* and *S. phylicoides*. Their uniformity makes it difficult to regard these plants as a hybrid swarm, for in that case one would expect to find a degree of variability, some plants being like one parent and some like the other. This is one of these puzzling cases of a geographical series of forms where the extremes are very different but are connected by intergrades rendering separation impossible. In consequence all the forms have been merged in one species for which the older name, *S. aethiopica* L. is retained.

Under the heading of variation a phenomenon of rather a different type may be discussed. In certain species, notably *S. incana*, the ovaries show considerable variation in the same head. They may be glabrous, slightly hairy or very hairy, arranged in no particular sequence, all types being equally fertile. Numerous dissections were made of whole heads from plants, many of them collected in different places, in order to see if the predominating type of ovary bore any relation to either vegetative features or locality. No definite correlation could be made between hairiness of the vegetative parts and hairiness of the ovary. However, the plants collected on Table Mountain showed a higher proportion of hairy ovaries than those collected in other places.

GEOGRAPHICAL DISTRIBUTION.

So many facts of interest arise in connection with the geographical distribution of Stoebe that it is proposed to deal fully with the subject in a separate paper. A few outstanding facts, however, may be mentioned here.

The majority of the species are centred in the south-western corner of Africa, but the species are not confined to the coastal belt. In the West *Stoebe plumosa* has two outliers apart from its main area of distribution, one on the Auas Mountains near Windhoek and another in Portuguese West Africa near Humpata, at an altitude of about 6,000 feet. In the East *Stoebe vulgaris* is common in the Transvaal, and extends into Natal and Rhodesia. *Stoebe kilimandscharica* is a characteristic shrub of high altitudes in tropical Africa, reaching a little way North of the Equator. Two species are found in Madagascar and one in Reunion, all at high altitudes. It is a matter of considerable interest that all these species belong to the group with small, erect corolla lobes. The species with the spreading type of corolla are confined to the coastal belt and in general have rather restricted areas of distribution.

SEASONAL BEHAVIOUR.

S. plumosa and *S. vulgaris* are closely related and have hitherto been regarded as the same species. It is therefore interesting to discover that in their seed germination and in the behaviour of the adult plant they show many similarities accompanied by some marked differences **(1)**. *S. vulgaris* grows in regions with a summer rainfall, and it is therefore natural that its growing season should occur during the Summer months. Flowers are produced in the Autumn and the achenes are shed in the late Autumn or early Winter. During the cold dry winter the seeds remain dormant and germinate as soon as the summer rains occur. Tests made in Cape Town showed that the seed was capable of germination as early as August. *S. plumosa* occurs mainly in a region having a winter rainfall and a hot dry summer. It is therefore surprising to find that it exhibits the same seasonal habits at *S. vulgaris*. Active growth takes place in the driest months of summer, at a time when most other plants show little activity. The flowering season, with the few exceptions previously noted, is the same as that of the Transvaal plant. In this case, however, there is what would appear to be a decided advantage in the case of the Cape plant as when the achenes are shed conditions for germination are ideal. In spite of this they do not germinate. Attempts to germinate them in the laboratory have failed, whereas achenes of their Transvaal relative germinate readily under the same conditions. As far as can be judged from the evidence available at present, *S. plumosa* agrees with all the south-western species in that the seed does not germinate in its first year. Research on this aspect of the problem is still in progress, but it seems probable that the south-western Stoebes agree in this respect with *Elytropappus rhinocerotis* where a full year's rest is required before germination takes place (**4**).

In considering the facts stated above it is clear that the Transvaal plant is perfectly adjusted to the climatic conditions under which it grows. This, however, cannot be said of *S. plumosa*. Not only does it show vegetative activity when climatic conditions are most unfavourable but when perfect conditions for germination are present it appears to be unable to take advantage of them. The obvious deduction is that *S. plumosa* is derived from an ancestor which was adapted to conditions similar to those enjoyed by *S. vulgaris*, and that in spite of its apparently ingrained ancestral habits has been sufficiently plastic in other directions to adapt itself to the different climatic conditions of the South West Cape.

An interesting difference between the two species lies in the response to burning. After a fire *S. vulgaris* rejuvenates rapidly by means of buds which are present in large numbers at the base of the stems (**1**). *S. plumosa*, however, is killed by fire and is perpetuated by seedlings which come up vigorously after burning.

ACKNOWLEDGMENTS.

I wish to record my thanks for the generous assistance afforded by the Director of Kew, both as regards facilities for work at Kew and for help in dealing with problems which have arisen since my return to South Africa. Through the kindness of Professor Humbert to whom I tender my grateful thanks, the valuable Paris collection was sent to South Africa for examination. This collection is particularly rich in the species of Stoebe occurring outside the Union of South Africa and made a complete

study of the genus possible. I am indebted to Professor J. F. V. Phillips and Mr. C. Cohen for material and information with regard to the habits and behaviour of *Stoebe vulgaris.* Specimens housed in the Bolus Herbarium, the South African Museum, the National Herbarium at Pretoria and the British Museum have been examined and I wish to express appreciation of the courtesy of the directors of those institutions, My thanks are also due to the directors of the herbaria at Berlin, Geneva. Stockholm and Uppsala for the loan of type specimens. Finally I wish to acknowledge the assistance of the Botanical Survey in connection with expenses of transport during the latter part of this investigation.

STOEBE [Linn. Coroll. Gen. p. 14 (1737)]. Linn. Sp. Pl. ed. I, p. 831 (1753). *Seriphium* Linn. Sp. Pl. ed. I, p. 928 (1753).

Capitula 1-flowered, grouped in heads or solitary. *Involucral bracts* in few rows, the innermost dry and membranous, the outermost shorter, green and somewhat woolly or dry and membranous. *Receptacle* naked. *Floret* bisexual, tubular, regular, 5-lobed. *Style branches* truncate, pencilled at the summit. *Achenes* with or without a rim-like annulus. *Pappus* either of several plumose bristles, usually somewhat joined at the base, or none. Branched shrubs with small alternate leaves which are often ericoid and twisted.

Chiefly South African but with two species in Madagascar and one in Reunion. Species 34.

KEY TO THE SPECIES.

A. Corolla with small, erect lobes, purple brown or yellow ; style not or hardly swollen at the base, without a disc at its base.	
B^1 Vegetative parts differentiated into long and short shoots.	
C^1 A green shrub ; habit erect ; leaves obtuse, those on the short shoots granular	7. *Burchellii*
C^1C^1 Colour usually grey-green, if green then plant is divaricately branched and the leaves not obtuse.	
D^1 Ovary with transverse lamellae on the upper part	8. *cinerea*
D^1D^1 Ovary without transverse lamellae.	
E^1 Leaves of the short shoots minute, usually grain-like ..	6. *plumosa*
E^1E^1 Leaves of the short shoots slender, not grain-like.	
F^1 Involucral bracts acuminate ; leaves usually less than 3 mm. ; pappus bristles about 12	5. *vulgaris*
F^1F^1 Involucral bracts obtuse or sub-acute ; leaves usually more than 3 mm. ; pappus bristles about 15	4. *kilimandscharica*
B^1B^1 Shoots of the vegetative parts all of one kind.	
C^2 Capitula borne singly at the ends of small shoots.	
D^2 Leaves completely obscuring the stem on young shoots	1. *cryptophylla*
D^2D^2 Stem visible between the leaves on young shoots.	
E^2 Leaves with a sharp bend just above the point of insertion ..	2. *pachyclada*
E^2E^2 Leaves erect, without a sharp bend above the point of insertion	3. *passerinoides*
C^2C^2 Capitula borne several together in heads.	
D^3 Leaves spirally twisted.	
E^3 Involucral bracts brown	9. *incana*
E^3E^3 Involucral bracts yellow	10. *spiralis*
D^3D^3 Leaves not spirally twisted.	
E^4 Leaves glandular	11. *intricata*
E^4E^4 Leaves eglandular	12. *saxatilis*

AA. Corolla lobes well developed and conspicuous (exc. *S. rosea*); pink or white (rarely purple in *S. nervigera*).
B^2 Disc at the base of the style absent.
C^3 Short shoots present; corolla white with spreading lobes .. .. 13. *alopecuroides*
C^3C^3 Short shoots absent; corolla pink with small and somewhat incurved lobes .. .. 27. *rosea*
B^2B^2 Swollen base of the style situated on a waxy disc.
C^4 Inner involucral scales membranous, brown.
D^4 Pappus present.
E^5 Leaves pungent mucronate.
F^2 Capitula massed in compact, rounded heads .. .. 26. *aethiopica*
F^2F^2 Capitula arising near the ends of the branches but not forming dense rounded heads .. .. 16. *nervigera*
E^5E^5 Leaves often mucronate but not pungent.
F^3 Leaves small, tightly adpressed .. .. 17. *rugulosa*
F^3F^3 Leaves well developed, not tightly adpressed.
G. Leaves excepting when very old with hairs on the lower surface.
H^1 Leaf with a sharp twist in the lower half, bringing the main part of the leaf into a horizontal position 21. *Muirii*
H^1H^1 Leaf straight or twisted, if twisted then not as above.
J^1 Innermost involucral scales glabrous.
K^1 Involucral scales acuminate .. .. 22. *phyllostachya*
K^1K^1 Involucral scales obtuse, mucronate .. 23. *copholepis*
J^1J^1 Innermost involucral scales sparingly pilose when young .. .. 24. *Ensorii*
GG Leaves glabrous or glabrescent on the lower surface.
H^2 Capitula grouped in compact rounded or oblong heads; individual capitula in most inflorescences only evident on dissection.
J^2 Outer involucral scales not much shorter than the inner; not or hardly leafy at the tip .. 25. *capitata*
J^2J^2 Outer involucral scales distinctly shorter than the inner; leafy at the tip.
K^2 Prostrate; soft in texture; midrib apparent on lower surface .. .. .. 18. *prostrata*
K^2K^2 Erect or spreading; firm in texture; midrib obscure on lower surface.
L Corolla lobes spreading abruptly; style branches exceeding the stamens .. 20. *cyathuloides*
LL Corolla lobes spreading gradually; style branches shorter than the stamens .. .. 19. *sphaerocephala*
H^2H^2 Capitula grouped in rather loose heads; individual capitula easily discernible without dissection.
J^3 Inner involucral bracts obtuse or sub-acute .. 14. *fusca*
J^3J^3 Inner involucral bracts acuminate .. 15. *humilis*
D^4D^4 Pappus absent.
E^6 Leaves tightly adpressed.
F^4 Leaves ovate; heads from 5 to 10 mm. in diam. .. .. 30. *Schultzii*
F^4F^4 Leaves lanceolate; heads about 3 mm. in diam. .. 31. *Salteri*
E^6E^6 Leaves not adpressed.
F^5 Leaves sharply mucronate .. .. 28. *bruniades*
F^5F^5 Leaves blunt at the apex .. .. 29. *montana*
C^4C^4 Inner involucral scales white or cream; corolla lobes narrow, erect.
D^5 Pappus bristles 5 .. .. 32. *gomphrenoides*
D^5D^5 Pappus bristles more than 5.
E^7 Leaves minute, adpressed .. .. 33. *microphylla*
E^7E^7 Leaves not as above .. .. 34. *leucocephala*

1. STOEBE CRYPTOPHYLLA Baker in Journ. Linn. Soc. XXII, p. 494 (1887). *S. biotoides* Baker, l.c.

A much branched shrub with a stiff habit, 2-3 m. high. Young branches completely hidden by the numerous leaves. *Leaves* linear, about 2 mm. long, adpressed, round-backed, sub-acute, somewhat woolly below when young, becoming more or less glabrous with age; densely woolly above. *Capitula* borne singly at the apex of short shoots arising towards the ends of the main branches. Lower leaves of the fertile shoot green, gradually becoming brown and scarious. Innermost involucral bracts about as long as the floret, acute or sub-acute. *Pappus* of about 16 bristles, joined at the base, a little shorter than the corolla. *Corolla* narrow, tubular, about 3 mm. long with small triangular teeth which reflex slightly at maturity. *Style branches* far exceeding the corolla when mature. *Style* slightly swollen at the base, without a disc. *Achene* 5-ribbed, somewhat rough.

Flowering season. July to October.

Habitat. Mountain slopes at high altitudes.

Madagascar. Barron 3349! 3504! Perrier de la Bathie 2773! 14416! 16344! Humbert 3836! 6159!

2. Stoebe pachyclada Humbert Comp. Madag. in Mem. Soc. Linn. Normand. XXV. (1923.)

A much branched shrub up to 3 m. high. Branches closely leafy, covered with short, rather coarse hairs when young. *Leaves* canoe-like, the concave side uppermost, narrowed and more or less horizontal at the base, turning abruptly upwards and running obliquely parallel to the stem, not adpressed, about 3 mm. long, glabrous below, canescent above. *Capitula* borne singly on rather short axillary branches grouped towards the apex of the main stems, transition from green leaves to bracts gradual, innermost bracts acute, about as long as the floret. *Pappus* of about 16 bristles, slightly joined at the base, a little shorter than the corolla. *Corolla* narrow, tubular, about 4 mm. long, with small, triangular teeth which bend outwards slightly at maturity. *Style branches* projecting far beyond the corolla at maturity ; style with a slight swelling at the base but without a disc. *Achene* with 5 ribs, papillose-scabrid between the ribs.

Flowering season. November to December.

Habitat. Mountain slopes at altitudes between 2,000 m. and 2,500 m.

Madagascar : Perrier de la Bathie 2783! Humbert 3835!

3. Stoebe passerinoides Willd. Sp. Pl. iii. p. 2408 (1804). *Stoebe paniculata* Cass. Dict. Sci. Nat. LI., p. 63 (1816-1830). *Seriphium passerinoides* Lam. Dict. I, p. 271 (1791). Less Syn. Comp., p. 345 (1832). DC. Prod. VI, p. 261 (1837).

A much branched shrub, about 2 m. high. Shoots of one type only on the purely vegetative parts, but the capitula arise at the apex of numerous specialised, short shoots. *Leaves* of the vegetative shoots erect, linear-subulate, from 2-4 mm. in length, somewhat keeled on the lower surface, involute, mucronate but sometimes obscurely so, densely woolly above, villous below when young but soon becoming glabrous, except at the base. Leaves of the short floral shoots much smaller, obtuse and adpressed but otherwise similar to the leaves of the main shoots. *Capitula* borne singly at the ends of specialised shoots, transition from green leaves to bracts gradual, innermost bracts light brown, scarious, about as long as the floret. *Pappus* of about 18 bristles, slightly joined at the base, a little shorter than the corolla. *Corolla* tubular, widening very slightly from the base upwards, with small erect, triangular teeth, a little over 3 mm. in length, purplish brown in colour. *Style branches* longer than the corolla at maturity. *Style* style hardly swollen at the base and without a disc. *Achene* 5-ribbed, scabrid.

Flowering season. April to July.

REUNION. M. G. de l'Isle 389 ! Gaudichaud ! Giraudy ! Commerson ! Boivin ! Arnott ! I. B. Balfour !

4. STOEBE KILIMANDSCHARICA O. Hoffm. in Engl. Pflanzenw. Ost. Af. p. 411 (1895). *Stoebe elgonensis* Mattf. in Notizbl. Bot. Gart, Berlin VIII, p. 236 (1922).

A much branched shrub or small tree, sometimes reaching a height of 6 m. Branches villous when young, becoming less hairy with age, with short shoots arising in the axils of the leaves on the main shoots so that the leaves usually appear tufted. *Leaves* linear, involute, those on the main branches up to 5 mm. in length (frequently shorter), those on the short shoots smaller, mucronate, more or less villous below, with matted wool above. *Capitula* in small groups in the axils of the leaves towards the ends of the branches, produced in large numbers. *Involucral bracts* in several rows, the outermost leafy, gradually becoming brown or yellow in colour and scarious, the innermost about as long as the floret, acute or obtuse. *Pappus* of 14-16 bristles, joined at the base, slightly shorter than the corolla. *Corolla* narrow, tubular, with small, erect, triangular lobes, about 3 mm. long, brownish yellow or purple in colour. *Style branches* much exserted at maturity. *Style* swollen at the base, without a glandular disc. *Achenes* with 5 well marked ribs, scaberulous especially in the upper part.

Flowering season. Plants have been found in flower at various times of the year.

Habitat. Mountain slopes at high altitudes.

NYASSALAND : Kyimbila, Stolz 1283 ! TANGANYIKA : Mount Meru, Burtt 4078 ! Oldeani Volcano, Burtt 4230 ! Loolmalassin mountain, Burtt 4206 ! Olomoti Crater, Burtt 4393 ! Njombe, Lynes D.71 ! Upper Ruhudje, Schlieben 731 ! KENYA : Mount Kenya, Alluaud 224 ! Hutchins 392 ! R. and Th. Fries 1312 ! Kilimandjaro, Alluaud 319 ! Mount Elgon, Snowden 803 ! Liebenberg 1662 ! Dümmer 3532 ! Mrs.

Lugard 315! Belgian Congo: Mountains to the West of Lake Kivu, Humbert 7582!

5. Stoebe vulgaris Levyns sp. n. *Frutex* ramosus, erectus vel expansus. *Folia* ericoidea, gracilia, saepe pungentia, axillis folioliferis. *Capitula* numerosa, in glomerulis. *Bracteae* interiores acuminatae. *Pappi setae* circiter 12. *Corolla* tubulosa, segmentis parvis, triangulatis, erectis. *Achenia* 5-costata.

A much branched grey shrub, usually under 1 m. but may reach 1·5 m. in height. Stems more or less woolly, bearing short shoots, in the axils of the leaves. *Leaves* of the main axes patent, slender, subulate, straight or very slightly twisted, often pungent, acuminate or obtuse, involute, 3 mm. in length or less, densely woolly above, cobwebby or almost glabrous below. Leaves of the short shoots usually about half the length of the main leaves, blunt or slightly mucronate. *Capitula* grouped in small heads in the axils of the upper leaves forming a simple, spike-like or branched inflorescence. *Involucral bracts* in several rows, the outermost short and leaf-like, the innermost brown, scarious, acuminate, longer than the florets. *Pappus* of about 12 bristles, slightly joined at the base, as long as the corolla. *Corolla* narrow, tubular, with small, erect, triangular teeth, about 2 mm. long, brownish in colour. *Style branches* exceeding the corolla when mature. *Style* without a basal disc. *Achene* 5-ribbed, scabrid. The type is C. E. Moss 2850.

Flowering season. March to May.

Cape Province: Elliot, Cala, Pegler 1743! Basutoland: Leribe, Dieterlen 885! Morija, Page (15974 in Bolus Herb.). Transvaal: Vereeniging, Burtt Davy 15237! Mooi River, Burke! Middleburg, Hewitt! Lydenburg, Wilms 748! Johannesburg, Moss, 2850! Potchefstroom, J. M. McLea 127! Turffontein, Bryant D.14! Potgietersrust, Galpin 9004! Barberton, Galpin 576! Gezina, C. A. Smith 198! Pretoria, Burtt Davy 2381! Natal: Giant's Castle, Symons 5! Drakensberg, Medley Wood 6310! Dumisa, Rudatis 1127! Rhodesia: Trias Hill, Mundy 3194! Inyanga, Eyles 3562!

6. Stoebe plumosa Thunb. Prod., p. 169 (1800). *Stoebe fasciculata* Cass. in Dict. Sci. Nat. LI., p. 62 (1816-1830). *Stoebe cinerea* Thunb. var. *plumosa* (Less) Harv. Fl. Cap III p. 284 (1865). *Stoebe virgata* Thunb. Prod., p. 170 (1800). *Seriphium plumosum* Linn. Sp. Pl., p. 928 (1753). DC. Prod. VI, p. 262 (1837). *Seriphium cinereum* L. var. *plumosum* Less. Syn. Comp. p. 350 (1832). *Seriphium vermiculatum* DC. Prod. VI, p. 263 (1837). *Seriphium plumosum* L., var. *glabriusculum* DC. Prod. VI, p. 263 (1837).

A shrub, varying in height from 30 cm. to 1·5 m., branching erect or divaricate. *Stem* usually woolly, sometimes densely so, short shoots developed in all leaf axils of the main shoots forming small tufts with a granular appearance. *Leaves* minute, those of the main stems ovate or sharply triangular, slightly concave above or involute, with the apex incurved, obtuse, frequently with a short mucro but occasionally this develops into a spine-like point, usually woolly, rarely almost glabrous; leaves of the short shoots usually oblong and grain-like, without a mucro. *Capitula* grouped in small heads in the axils of leaves towards the ends of the main shoots, sometimes forming a spike-like inflorescence but more often the inflorescence is branched. *Involucral bracts* in several rows, the outermost small and like the leaves, the innermost brown, scarious, sharply acute and a little longer than the corolla. *Pappus* of about 12 bristles, slightly joined at the base, as long as or a little shorter than the corolla. *Corolla* tubular, with small erect, triangular lobes, about 2 mm. long or less, purple or brown in colour. *Style branches* far exserted from the corolla at maturity. *Style* without a basal disc. *Achene* 5-ribbed, scabrid.

Flowering season. Chiefly April to May, but certain forms flower in the Spring, and occasionally plants may be found in flower at other times.

ANGOLA: Near Humpata, Pearson 2788! SOUTH WEST AFRICA: Auas Mountains, J. Rennie (Levyns 1982)! Lichtenstein, Dinter 3513! 4674! VAN RHYNSDORP: Giftberg, Phillips 7398! CLANWILLIAM: Cederberg, Levyns 2986! near Citrusdal, Levyns 4781! 4782! CERES: Eland's Kloof, Levyns 4882! 4905! Cold Bokkeveld, Levyns 2408! LAINGSBURG: Top of Witteberg, Compton 2972! WORCESTER: du Toit's Kloof, Drege! Matroosberg, Levyns 970! Bain's Kloof, Levyns 5047! TULBAGH: Great Winterhoek, E. P. Phillips (11226 in South African Museum), Bolus 5078! MALMESBURY: Riebeek Kasteel, Ecklon! Paardeberg, Pillans 6324! CAPE: Flats near Rondebosch, Burchell 733! Pappe! near Cape Town, Bolus 4757! Claremont, Wolley Dod 2613! Simon's Bay, MacGillivray 605! Cape Point, Baker 778! STELLENBOSCH: Zeyher! between Sir Lowry's Pass and Jonker's Hoek, Burchell 8297! Sir Lowry's Pass, Ecklon 497! CALEDON: Kleinriviersberg, Ecklon 498! between Palmiet and Steenbras rivers, Pappe! Between Houw Hoek and Palmiet River, Burchell 8160! BREDASDORP: The Poort, Levyns 4463! KNYSNA: Burchell 5461! UNIONDALE: Langekloof, Burchell 4947! PORT ELIZABETH: Cooper 1479! ALBANY: Grahamstown, Glass 332! EAST LONDON: Rattray 1376!

7. STOEBE BURCHELLII Levyns sp. n. *Frutex* ramosus, erectus. *Folia* minima, obtusa, viridia, glabra, subcarnosa, axillis folioliferis. *Capitula* numerosa, in glomerulis, parvis foliis intermixtis. *Bracteae* interiores acutae. *Pappi setae* circiter 12. *Corolla* tubulosa, segmentis parvis, triangulatis, erectis. *Achenia* 5-costata.

A much branched, erect shrub, reaching a height of 1·5 m., green in colour. *Stems* shortly woolly, with short shoots in the axils of the leaves. *Leaves* minute, under 1 mm. in length ; leaves on the main shoots deltoid, fleshy, slightly gibbous at the base, concave above, obtuse, green and glabrous on the lower surface. Leaves on the short shoots smaller than those on the main shoots, granular in appearance. *Capitula* numerous, borne singly or in small groups in the axils of the main leaves. *Involucral bracts* in several rows, the outermost similar to the leaves of the short shoots, the innermost scarious, brown, acute, a little longer than the corolla. *Pappus* of about 12 bristles, slightly joined at the base, about as long as the corolla. *Corolla* tubular with small, erect, triangular lobes, purplish brown in colour, about 2 mm. long. *Style branches* exserted from the corolla, reflexed when mature. *Style* slightly swollen at the base without a disc. *Achene* with 5 ribs, scabrid.

Flowering season. February to June.

The type is C. E. Moss 5382.

ROBERTSON : Montagu, C. E. Moss 5382 ! LAINGSBURG : Witteberg, near Matjesfontein, Rehmann 2931 ! Compton 2504 ! PRINCE ALBERT : Zwartberg Pass, Levyns 5036 ! UNIONDALE : Between Avontuur and Uniondale, Fourcade 2097 ! Langkloof, Burchell 4886 ! Levyns 3802 !

8. STOEBE CINEREA Thunb. Prod. p. 169 (1800) *Stoebe cinerea* Thunb. var. *cinerea* Harv. Fl. Cap. III, p. 284 (1865). *Seriphium cinereum* Linn. Sp. Pl. p. 928 (1753). *Seriphium cinereum* L. var. *cinereum* Less. Syn. Comp. p. 350 (1832).

A branched shrub which may reach 1·5 m. in height. *Stems* usually somewhat woolly, rarely glabrous, with short shoots in the axils of many of the leaves. Leaves on the short shoots smaller than those on the main axes and not conspicuous. *Leaves* ericoid, twisted, squarrose, with a distinct swelling at the base of the midrib on the lower surface, sharply mucronate, rarely more than 5 mm. in length usually less, slightly woolly or glabrous on the lower surface, densely woolly above. *Capitula* grouped in small heads in the axils of the upper leaves, forming a long spike-like inflorescence in which the individual heads are easily discernible. *Involucral bracts* in several rows the outer leaf-like and woolly, the inner brown, scarious, the innermost with long acuminate points, longer than the floret. *Pappus* of about 12 bristles, a little shorter than the corolla. *Corolla* tubular with small, erect, triangular teeth, about 2 mm. in length, brown or purple in colour. *Style branches* much exserted when mature. *Style* without a basal disc. *Ovary* faintly ribbed with well-marked, transverse lamellae on the upper part. *Achene* 5-ribbed, scabrid.

Flowering season. Usually April—May. An exceptional plant was recorded in flower in September.

Paarl : Klein Drakenstein Mountains, Galpin 11038! FrenchHoek, C. A. Smith 2642! Cape : Table Mountain, Ecklon 501! Prior! Krebs! Woolley Dod 1039! Pappe! MacOwan 1007! Tyson 2375! Devil's Peak, Bolus 3962! between Cape Town and Newlands, Burchell 482! Wynberg, Burchell 859! between Wynberg and Constantia, Burchell 805! between Hout Bay and Wynberg, Drege! Kalk Bay, Levyns 4240! Stellenbosch : Sir Lowry's Pass, Burchell 8189! Caledon : Palmiet River Mouth, Levyns 5392! Genadendal, Levyns 4854! 4842!

9. Stoebe incana Thunb. Prod. Pl. Cap. p. 169 (1800). Thunb. Fl. Cap. ed. Schultes, p. 725 (1823). Less. Syn. Comp, p. 348 (1832). DC Prod. VI, p. 260 (1837). Harv. Fl. Cap. III, p. 283 (1865) *Stoebe leiocarpa* Sch. Bip. in Flora XXVII, p. 694 (1844).

A branched shrub, albo-tomentose or grey-green in colour, maximum height about 50 cm. *Leaves* usually slender, rarely more than 6 mm. long, frequently less, spirally twisted and squarrose, ranging from densely woolly to almost glabrous, but always with some wool when young. *Capitula* massed in rounded or oblong heads. *Involucral scales* in few rows, the outer much shorter than the inner and somewhat like the leaves, the inner brown, sharply acuminate, longer than the florets. *Pappus* of about 14 bristles, slightly joined at the base, a little shorter than the corolla tube. *Corolla* tubular with small, erect, triangular lobes, about 2·5 mm. in length and about 8 mm. wide, dull purple in colour. *Style branches* much exserted from the corolla when mature. *Style* slightly swollen at the base but without a basal disc. *Ovary* either glabrous or hairy, often both found together in the same head. *Achenes* more or less hairy, faintly ribbed.

Flowering season. February—May.

Paarl : MacOwan 838! Stellenbosch : Ecklon! Cape : Table Mountain, Ecklon and Zeyher! Burchell 596! Drege! Harvey! Schlechter 283! Levyns 4245! 4243! 4248! between Table Mountain and Lion's Mountain, Krauss! near Cape Town, Bolus! Muizenberg, Wolley Dod 2530! Kalk Bay, Levyns 4246! 4247! Simon's Bay, Prior! Smitswinkel Bay, Salter 280/7! 280/7a! Caledon : Palmiet River, Ecklon! Viljoen's Pass, Levyns 3909! Buffels Mountain near Rooi Els, Pillans 8182!

Note.—In the past this species has frequently been confused with *S. spiralis* Less. It may be distinguished from that species by its relatively shorter and broader corolla, its longer pappus and its brown, not yellow, involucral bracts.

10. STOEBE SPIRALIS Less. Syn. Comp. p. 347 (1832). *Stoebe spiralis* Less var. *flavescens* Harv. Fl. Cap. III, p. 283 (1865). *Stoebe filaginea* Sch. Bip. in Pollichia XVIII—XIX, p. 179 (1861), *Seriphium flavescens* DC Prod. VI, p. 263 (1837). *Seriphium filagineum* DC Prod. VI, p. 263 (1837).

A branched shrub, reaching 50 cm. in height, usually grey-green in colour but occasionally white owing to the copious development of wool. *Leaves* slender, rarely over 6 mm. in length, spirally twisted, squarrose. *Involucral bracts* in few rows, the outer much shorter than the inner, somewhat leaf-like and woolly, the inner yellow, acuminate, as long as or a little shorter than the mature floret. *Pappus* of about 14 bristles, slightly joined at the base, much shorter than the corolla tube. *Corolla* narrow, tubular with small, erect, triangular teeth, about 3 mm. long and about 0·5 mm. wide, light brown or yellow in colour. *Style branches* much exserted from the corolla when mature. *Style* slightly swollen at the base, but without a basal disc. *Ovary* usually more or less hairy. *Achenes* hairy with very faint ribs.

Flowering season. March—May.

CERES : Eland's Kloof, Levyns 4892! Skurfdebergen, Primos (45696 in South African Museum)! Michell's Pass, C. A. Smith 2700! TULBAGH : Great Winterhoek, Galpin 12586! WORCESTER : Du Toit's Kloof, Drege! Waaihoek, Barnard (45668 in South African Museum)! Bain's Kloof, Salter 373/3! PAARL : Klein Drakenstein, Galpin 10619! STELLENBOSCH : Mundt and Maire! Sir Lowry's Pass, MacOwan 117! Thoday (15878 in Bolus Herb.)! CALEDON : Between Houw Hoek and Palmiet River, Burchell 8166! Between Palmiet River and Sir Lowry's Pass, Burchell 8183! Houw Hoek, Schlechter 7777! Mountains of Baviaans Kloof, Burchell 7617! Levyns 4853! RIVERSDALE : Muir 2511! LADISMITH : Seven Weeks' Poort, Marloth 2948! MOSSEL BAY : Robinson Pass, Pocock (Levyns 4968)!

Note.—The yellow colour of the bracts appears to be lost with age, a fact that must be borne in mind when dealing with herbarium specimens. In the field no colour other than bright yellow has been observed. Fortunately good characters of pappus and corolla serve to separate this species from the closely-related *S. incana.*

11. STOEBE INTRICATA Levyns sp. n. *Frutex* ramosissimus, intricatus. *Folia* oblongo-lanceolata, plerumque adpressa, supra dense albo-lanata, infra leviter araneosa vel glabra, glandulosa, axillis nudis. *Capitula* numerosa in glomerulis parvis. *Bracteae* interiores acutae. *Pappi setae* circiter 20. *Corolla* tubulosa, segmentis parvis, triangulatis, erectis, purpurea. *Achenia* glabra, costis 10, haud prominentibus.

An intricately branched shrub about 1 m. in height. *Stems* woolly with numerous stalked glands, not differentiated into long and short shoots, branches arising at a wide angle. *Leaves* mostly adpressed, oblong lanceolate, up to 3 mm. long, concave above, obtuse and slightly humpbacked, somewhat cobwebby or almost glabrous on the lower surface, with few or many sessile or almost sessile glands. *Capitula* in numerous small groups, both lateral and terminal. *Involucral bracts* in several rows, the outer bracts short leafy and glandular, woolly or almost glabrous; the inner bracts brown, scarious, acute, equalling or slightly shorter than the florets. *Pappus* of about 20 bristles, slightly joined at the base, equalling the corolla. *Corolla* tubular, with small, erect, triangular lobes which reflex slightly on the extrusion of the style branches, about 3 mm. long, deep purple. *Style branches* far exserted at maturity. *Style* swollen at the base but without a glandular disc. *Achene* smooth with about 10 inconspicuous ribs.

Flowering season. April—July.

The type is Levyns 5034.

CERES: Eland's Kloof in the Cold Bokkeveld, Levyns 4888! 4900! 4906! WORCESTER: Hex River Pass, Levyns. ROBERTSON: Levyns 5512! RIVERSDALE: Muiskraal, Levyns 2122! LADISMITH: Seven Weeks' Poort, Levyns. PRINCE ALBERT: Pocock S.180! Levyns 5034!

12. STOEBE SAXATILIS Levyns sp. n. *Frutex* parvus, ramosus. *Folia* lineari-lanceolata, conferta, incurva, sed non adpressa, lanata. *Capitula* in glomerulis parvis ad apicem ramulorum vel in axillis. *Bracteae* interiores acutae. *Pappi setae* circiter 20. *Corolla* tubulosa, purpurea, segmentis parvis, triangulatis, erectis.

A low branched shrub, 60 cm. high or less. Branches woolly when young, becoming more or less glabrous with age, not differentiated into long and short shoots. *Leaves* linear-lanceolate, about 2·5 mm. in length, incurved, closely and somewhat obliquely set the whole branch thus giving the impression of a chain, densely woolly on both surfaces. *Capitula* in rather small groups towards the ends of the branches, either terminal or lateral. *Involucral bracts* in few rows, the outer short and similar to the leaves, the inner scarious, acute, about equalling the floret. *Pappus* of about 20 bristles, slightly joined at the base, about as long as the corolla or a little shorter. *Corolla* tubular, with small erect, triangular lobes which reflex slightly on the extrusion of the style branches, about 3 mm. long, purple. *Style branches* exserted and reflexed at maturity. *Style* swollen at the base, without a glandular disc. *Ovary* glabrous and faintly ribbed. *Achene* not seen.

Flowering season. April—May.

The type is Levyns 4910.

CERES : Eland's Kloof, Cold Bokkeveld, Levyns 4894! 4901! 4910! 4922! WORCESTER : Chavonnesberg, Galpin 12744!

Note.—This species appears to be characteristic of high altitudes from 3,500 to 5,000 feet, and is most frequently found in rock crevices.

13. STOEBE ALOPECUROIDES Less. Syn. Comp. p. 349 (1832) DC. Prod. VI, p. 260 (1837). Harv. in Fl. Cap. III, p. 284 (1865). *Seriphium alopecuroides* Lam. Encyc. i, p. 271 (1791).

A robust erect shrub up to 1·5 m. in height. Main axes covered with rather shaggy hairs, giving off numerous short lateral branches bearing crowded leaves. *Leaves* ericoid, spirally twisted, pungent, mucronate, usually under 1 cm. in length, glabrous or canescent on the lower surface. *Capitula* densely crowded in terminal spikes 5—15 cm. long and 15—20 mm. broad, with foliage leaves apparent between the groups of capitula. *Involucral bracts* in few rows, the outer much shorter than the inner, green tipped, woolly, obtuse, the inner scarious and brown, glabrous or hardly woolly, sharply acute. *Pappus* of about 16 free bristles, slightly longer than the corolla tube. *Corolla* with well developed, spreading, triangular lobes, white. *Style branches* almost reaching the tips of the corolla lobes when mature. *Style* not swollen at the base, without a basal disc. *Ovary* with 5 wing-like ribs which may show serrations in the upper part. *Achenes* with about 10 well-marked ribs, serrated in their upper portion.

Flowering season. July—December.

RIVERSDALE : Garcia's Pass, Thorne (38958 in the South African Museum)! MOSSEL BAY : Cloete's Pass, Muir 1073! GEORGE : Rogers 4296! Jonkersberg, Rendle 162! near Kayman's River, Burchell, 5770! 5795! Levyns 787! 4973! Knysna, Bowie! Bolus 2105! Newdigate (6092 in South African Museum)!. Kapp 74! Millwood, Tyson 1474! Plettenberg Bay, Rogers 27882! PRINCE ALBERT : Zwartberg Pass, Bolus 11539! UITENHAGE : Zwartkops River, Pappe! WITHOUT PRECISE LOCALITY : Niven! Shantz!

14. Stoebe fusca Thunb. Prod. Pl. Cap. p. 170 (1800). Harv. in Fl. Cap. III, p. 283 (1865). *Seriphium fuscum* Linn. Sp. Pl. p. 928 (1753). Less. Syn. Comp. p. 351 (1832). DC. Prod. VI, p. 262 (1837).

A small, much branched shrub, up to about 30 cm. in height. Stems covered with a grey, cobwebby indument. *Leaves* ericoid, spirally twisted, from 1—8 mm. long, lower surface cobwebby when young, glabrescent, mucronate or obtuse. *Capitula* distinct, grouped in terminal heads which are usually oblong but may be rounded. *Involucral bracts* in several rows, the outermost short, green or woolly, the inner longer, scarious, light brown, obtuse or sub-acute, a little exceeding the corolla tube in length. *Pappus* of about 18 bristles, as long as or longer than the corolla tube. *Corolla* pink or white, with spreading lobes. *Style branches* shorter than the corolla lobes. *Style* swollen at the base and seated on a waxy disc. *Achene* 5 ribbed, covered with adpressed, shaggy hairs.

Flowering season. March—May.

Clanwilliam : Pakhuis Pass, le Roux! Ceres : Eland's Kloof, Cold Bokkeveld, Levyns 4880! 4921! Paarl : Cummings! Malmesbury : Near Moorreesburg, Pillans, 6802! Cape : Devil's Mountain, Pappe! Flats, Drege! Cape Town, Burchell 922! Wynberg, Burchell 885! Bolus! Lion's Head, Pillans 6175! Camps Bay, Pappe! Hout Bay, Wolley Dod 950! Schlechter 7211! Chapman's Peak, Levyns 4970! Silvermine Valley, Salter 2057! Simon's Town, Wolley Dod 942! Dr. Kirks! Mrs. Jameson! Stellenbosch : Somerset West, Drege! Sir Lowry's Pass, Burchell 8241! Caledon : Houw Hoek, Schlechter 7560! Caledon, Bolus 9904! near top of Shaw's Mountain, Levyns 3531! Bredasdorp : Schlechter 10537!

Without precise locality : Ecklon and Zeyher! Bowie! Grey! Mund! Forster! Lambert!

15. Stoebe humilis Levyns sp. n. *Suffrutex* humilis, parce ramosus. *Folia* linearia, involuta, mucronata, base erecto-adpressa, patentia, supra torta. *Capitula* in glomerulis laxis, terminalibus. *Bracteae* interiores acuminatae. *Pappi setae* circiter 15. *Corolla* alba, segmentis triangulatis, patentibus. *Styli* base in disco cereo sedentes.

A low undershrub, up to 15 cm. high with leafy branches. *Stems* cobwebby when young. *Leaves* linear, about 6 mm. long, strongly involute, mucronate, erect adpressed at the base, but patent and twisted for over two-thirds of the total length, glabrous below, white woolly above. *Capitula* grouped in loose, terminal heads, rarely exceeding 1 cm. in diam., usually less. *Involucral bracts* in several rows, the outer about one-third the length of the inner, leaf-like and cobwebbed, the inner scarious, glabrous, acuminate, equalling or a little shorter than the corolla. *Pappus* of about 15 rather stout bristles, not or hardly joined at the base, about the same length as the corolla. *Corolla* white, about 4 mm. long, with spreading lobes about one quarter the length of the corolla. *Style branches* not exceeding the corolla lobes. *Style* with a swollen base, seated on a waxy disc. *Ovary* glabrous. *Achene* glabrous or slightly puberulous.

Flowering season. January—February.

CALEDON : Palmiet River Mouth, Levyns 5369! (the type).

16. STOEBE NERVIGERA Sch. Bip. in Pollichia XVIII—XIX, p. 183 (1861). Harv. in Fl. Cap. III, p. 281 (1865). *Seriphium nervigerum* DC. Prod. VI, p. 263 (1837). *Seriphium nervigerum* DC. var. *squarrosum* DC. Prod. VI, p. 263 (1837).

A small stiffly branched shrub about 30 cm. high. *Stems* woolly when young. *Leaves* imbricate, erect or recurved, linear subulate, pungent mucronate, involute, glabrous on the lower surface with a prominent midrib and two conspicuous, lateral, parallel veins at the base of the leaf, the latter forming the thickened margin in the upper part of the leaf, pitting in between the veins obvious in dried specimens, obscure when fresh. *Capitula* grouped at the ends of the branches in the axils of leaves, individual capitula distinct. *Involucral bracts* in several rows, the outer shorter, somewhat leaf-like, the inner longer, light straw-coloured, stiff, taper-pointed, almost as long as the floret, sometimes reaching 8 mm. in length. *Pappus* of about 18 stiff, well developed bristles, almost as long as the corolla. *Corolla* white, rarely purple, with narrow, slightly spreading lobes. *Stamens* as long as the corolla. *Style* slightly swollen at the base, seated on a waxy disc. *Achene* glabrous, with very faint, broad ribs, slightly rugose between the ribs.

Flowering season. January—July.

VAN RHYNSDORP : Between Heerenlogement and Knaga Berg, Drege! CLANWILLIAM : Olifant's River, Zeyher! WORCESTER : Hex River, Bolus 5964! Near Worcester, Rehmann 2619! Between Worcester and Cogman's Kloof, Bolus 8097! CALEDON : Zoutmelks Valley, Burchell 7570! Genadendal, Burchell 7826! Levyns 4865! Greyton, Gillett 879! BREDASDORP : Schlechter 7668! RIVERSDALE : Albertinia, Muir 1352!

17. STOEBE RUGULOSA Harv. in Fl. Cap. III, p. 282 (1865).

Small shrub with thin whip-like branches, about 40 cm. in height. *Stems* covered with white wool when young, becoming more or less glabrous later. *Leaves* small, rarely more than 2 mm. in length, adpressed, imbricate, linear-subulate with a short mucro, glabrous on the lower surface with three parallel veins which are not prominent, pitted in between the veins. *Capitula* grouped at the ends of the branches in the axils of the leaves, individual capitula distinct. *Involucral bracts* in several rows, the outer shorter and somewhat leaf-like, the inner scarious, mostly obtuse, rarely sub-acute, a little longer than the corolla tube, about 3 mm. in length. *Pappus* of about 18 bristles, a little shorter than the corolla. *Corolla* pink, with rather narrow, spreading lobes. *Stamens* as long as the corolla. *Style* slightly swollen at the base, seated on a disc. *Ovary* with a minutely toothed, cup-like annulus, minutely puberulous. *Achene* not seen.

Flowering season. March to May.

SWELLENDAM: Breede River, Mund! RIVERSDALE: Albertinia, Muir 1999! Oakdale, Muir 2544! WITHOUT LOCALITY: Marloth 8089!

18. STOEBE PROSTRATA Linn. Mant. ii, p. 291 (1771). Thunb. Prod., p. 169 (1800). Thunb. Fl. Cap. ed. Schultes, p. 726 (1823). Harv. in Fl. Cap. III, p. 281 (1865) *Seriphium prostratum* Lam. Dict. I, p. 273 (1791). Less. Syn. Comp., p. 351 (1832). DC. Prod. VI, p. 265 (1837).

Small plant of prostrate habit. *Stems* slender, slightly woody, cobwebby when young. *Leaves* linear-oblong, mucronate, flat or somewhat involute, twisted near the base, midrib evident on the glossy lower surface. *Capitula* grouped in rounded, terminal heads, about 1 cm. in diam. *Involucral bracts* in few rows, the outer hairy and green-tipped, the inner scarious, sharply acute, slightly longer than the corolla tube. *Pappus* of about 18 fine bristles, about as long as the corolla tube. *Corolla* pink, the lobes triangular spreading. *Style* swollen at the base and seated on a waxy disc. *Achene* with 5 well marked ribs, covered with adpressed hairs.

Flowering season. January to February.

CAPE: Table Mountain, Burchell 649! Drege! Harvey! Bolus 139! Bolus 4913! Wolley Dod 855! Salter 280/5! J. D. C. Lamb, 3205! Orange Kloof, W. Jacobsen (50674 in South African Museum)! Zwart Kop, Salter! PAARL: French Hoek, Schlechter 10263! CALEDON: Top of mountain at Genadendal, Burchell 7769!

Note.—This species is characteristic of high altitudes. It is a common plant from the Lower Plateau to the top of Table Mountain.

19. Stoebe sphaerocephala Schlecht. in Engl. Jahrb. XXVII, p. 202 (1900).

Plants with erect or procumbent habit, somewhat rigid. *Stems* cobwebby when young, almost glabrous later except at the nodes. *Leaves* variable in size, from 5-15 mm. in length, linear or oblong, mucronate, twisted near the base, lower surface glabrous or slightly woolly when young, midrib not apparent. *Capitula* grouped in rounded, terminal heads with foliage leaves projecting here and there, usually a little more than 1 cm. in diam. *Involucral bracts* in few rows, the outer shorter, somewhat leafy and woolly, the inner about as long as the floret, scarious, acute. *Pappus* of about 18 bristles, about as long as the corolla tube. *Corolla* with spreading, oblong lobes which are usually less than half the length of the corolla tube, white or pink in colour. *Style* and its branches when mature, shorter than the stamens; style swollen at the base, seated on a waxy disc. *Achene* with 5 inconspicuous ribs, covered with upwardly directed hairs which absorb moisture readily.

Flowering season. November to February.

Cape: Simonsberg, Wolley Dod 288! Boonberg, Pillans 4918! Redhill, Salter 2928! near Buffels Bay, Salter, 2934! Olifant's Bosch, Levyns 4933! Caledon: Palmiet River, near Grabouw, Bolus 4145! Mossel River, L. Guthrie! Klein River mouth, Schlechter 9523! Houw Hoek, Schlechter 5056! Riversdale: near Albertinia, Muir 1259! Garcia's Pass, Marloth 3563!

20. Stoebe cyathuloides Schlecht. in Engl. Jahrb. XXVII p. 201 (1900).

Closely allied to *S. sphaerocephala* Schlecht. with which it agrees in its vegetative and many of its floral characters. It differs from *S. sphaerocephala* in (*a*) the linear corolla lobes which are about half the length of the corolla tube, (*b*) the relatively narrow corolla tube and (*c*) the style branches which are longer than the stamens when mature.

Flowering season, December.

Bredasdorp: Rietfontein Poort, Schlechter 9676! Bolus 8552!

Note.—I have retained this species on account of its distinguishing floral features. However, it is known from two collections only, both from the same locality, and it is possible that when further material from the Caledon—Bredasdorp area is available it may be found to be merely a form of what is now known as *S. sphaerocephala*, a species in which slight variability of the corolla lobes has been observed. If at some future time it be found necessary to unite these species then the name *S. cyathuloides* has priority.

21. STOEBE MUIRII Levyns sp. n. *Frutex* parvus, expansus. *Folia* elliptico-oblonga, mucronata, parce involuta, multo torta et flexuosa, supra tomentosa, infra villoso-tomentosa. *Capitula* in glomerulis densis, oblongis, terminalibus. *Bracteae* interiores acuminatae. *Pappi setae* circiter 19. *Corolla* rosea segmentis triangulatis, patentibus. *Styli* base turgidi, in disco cereo sedentes.

A low, spreading shrub. *Branches* arising at a wide angle, stems densely tomentose. *Leaves* elliptic-oblong, mucronate, slightly involute with a marked twist and bend in the lower part, resulting in the main part of the leaf lying with its midrib more or less horizontal and its lower surface facing outwards, up to 5 mm. long and 2 mm. wide, the lower surface with rather long and loose hairs. *Capitula* massed at the ends of the branches in cylindrical spikes up to 4 cm. in length and 1 cm. in width. *Involucral bracts* in few rows, the outer shorter, woolly, the inner scarious, about as long as the corolla, acuminate. *Pappus* a little longer than the corolla tube, consisting of about 19 bristles slightly joined at the base. *Corolla* with acute, spreading lobes, pink in colour. *Style* with a swollen base, seated on a waxy disc. *Ovary* somewhat scabrid, with faintly marked ribs. *Achene* not seen.

Flowering season. April.

RIVERSDALE : Still Bay, Muir 2399! (The type).

22. STOEBE PHYLLOSTACHYA Sch. Bip. in Pollichia XVIII—XIX, p. 179 (1861). *Stoebe phlaeoides* Sch. Bip. in Pollichia XVIII—XIX, p. 179 (1861). Harv. in Fl. Cap. III, p. 282 (1865). *Stoebe phlaeoides* Sch. Bip. var *phyllostachya* Harv. in Fl. Cap. III p. 282 (1865). *Seriphium phyllostachyum* DC. Prod. VI, p. 262 (1837). *Seriphium phlaeoides* DC. Prod. VI, p. 262 (1837).

A branched shrub, 30 cm. or more in height. *Stems* villous glabrescent. *Leaves* linear-lanceolate, up to 1 cm. in length, varying from almost flat to involute on the same plant, straight or slightly twisted sub-aristate, erect below the inflorescence, spreading elsewhere, loosely villous on the lower surface, sometimes glabrescent, hairs densely matted above. *Capitula* massed in somewhat rounded heads in the axils of the upper leaves which may project beyond the glomerules ; whole inflorescence usually oblong, occasionally rounded, dense when the flowers are fully open, variable in size. *Involucral bracts* in few rows the outer not less than half the length of the inner and not wholly leaf-like ; outermost bracts with a green midrib, slightly hairy on the back, innermost brown, scarious, acuminate, the longest as long as or a little longer than the corolla tube. *Pappus* of 12-14 bristles, slightly joined at the base, shorter than or almost equalling the corolla tube. *Corolla* with rather narrow, spreading lobes, the tube about 2·5 mm. long, the lobes about 1 mm. long, white. *Style branches* not exceeding the corolla lobes. *Style* swollen at the base, seated on a waxy disc. *Ovary* glabrous or slightly puberulous, with faintly marked ribs. *Achenes* not seen.

Flowering season. February—April.

SWELLENDAM: Mund 366! Mund 107! Niven! Zuurbraak, Thode A2337! RIVERSDALE: Garcia's Pass, Marloth 3571! UNIONDALE: Langkloof, Burchell 5052! 5131! Many Waters Kloof, Compton 5179!

Note.—Compton 5179 is a more slender form than usual and the heads are rounded instead of oblong. Apart from this there are no important differences. *S. phyllostachya* is closely related to *S. capitata*, a predominantly western species, in which field studies have made it necessary to include plants showing a similar range of variation in one species (see p. 7). Similarly in this instance Compton 5179 has been treated as a slender form of *S. phyllostachya*.

23. STOEBE COPHOLEPIS Sch. Bip. in Pollichia XVIII—XIX, p. 179 (1861).

A small, erect, branched shrub. *Leaves* somewhat adpressed, oblong-lanceolate, convex-backed, with a well developed black mucro, 6-8 mm. in length, densely woolly on the lower surface when young, but the wool tending to disappear with age. *Capitula* in oblong, terminal heads. *Involucral bracts* oblong, obtuse, with a short mucro. *Pappus* of about 12 bristles, slightly joined at the base, equalling the corolla tube in length. *Corolla* with triangular, spreading lobes. *Style* seated on a waxy disc. *Ovary* minutely puberulous.

Flowering season. February to March.

CALEDON: Palmiet River, Ecklon 484! BREDASDORP: near Elim Bolus!

Note.—This species approaches *S. phyllostachya* very closely and it may prove to be a form of that species. Herbarium material is scanty. The specimen collected by Bolus has the imperfect remains of a few flowers only.

24. STOEBE ENSORII Compton, Kew Bull., p. 259 (1934).

Small, spreading or sub-erect shrub. *Leaves* numerous, scattered, imbricate, twisted, sub-patent or erect, oblong-lanceolate, somewhat involute, acute, mucronate, about 3 mm. long, upper surface densely woolly, the lower surface loosely woolly. *Capitula* massed in globose or cylindrical, terminal heads, up to about 25 mm. long and 12 mm. wide. Involucral bracts in few rows, the outer a little shorter than the inner ; the outermost with a green midrib, pilose ; the innermost brown, scarious, sparingly pilose, acuminate, a little shorter than the floret. *Pappus* of about 12 bristles, united at the base, a little longer than the corolla tube. *Corolla* with spreading, triangular lobes, pink. *Style* with a swelling at the base, seated on a waxy disc. *Ovary* minutely puberulous. *Achene* not seen.

Flowering season. July.

UNIONDALE : Lauterwater, Compton 4195!

25. STOEBE CAPITATA. Berg. Descr. Pl. Cap., p. 338 (1767). Harv. in Fl. Cap. III, p. 283 (1865). *Stoebe Mossii* S. Moore, Journ. Bot. LVIII, p. 76 (1920). *Stoebe affinis* S. Moore, Journ. Bot. LVIII, p. 77 (1920). *Seriphium capitatum* Less. Syn. Comp. p. 252 (1832). DC. Prod. VI, p. 263 (1837). *Seriphium perotrichoides* Less. l.c., DC. l.c.

A branched shrub, 50 cm. high or less, erect or sub-erect. *Stem* cobwebby or somewhat woolly when young. *Leaves* linear-subulate, strongly involute, much twisted, variable in length, from 2-10 mm., sharply mucronate, erect or patent, loosely woolly on cobwebby on the lower surface when young, frequently glabrescent. *Capitula* massed in terminal rounded or oblong heads. *Involucral bracts* not differing greatly in size and texture ; the outermost with a green keel, the innermost scarious, acute or acuminate, as long as or a little longer than the corolla tube. *Pappus* of about 12 bristles, well or poorly developed, as long as the corolla tube or shorter. *Corolla* with well developed, spreading lobes, pink or white. *Style* swollen at the base, seated on a waxy disc. *Ovary* usually covered with numerous, fine, adpressed hairs. *Achene* with rather shaggy hairs.

Flowering season. December to March.

PIQUETBERG : Olifant's River Mountains, Edwards 91! CERES : Rogers 17605! C. A. Smith, 2701 ! WORCESTER : du Toits Kloof, Cummings 311! TULBAGH : Great Winterhoek, Drege! MALMESBURY : Mamre, Baur 1179! PAARL : Drege! Dal Josaphat, Tyson 884! Bain's Kloof, Schlechter 10244! CAPE : Zeekoe Vallei, Ecklon! Cape Flats, Burchell 709! Princess Vlei, McOwan 1621! Diep River, O. Kuntze! Devil's Peak, Page! Rondebosch, Bolus 3290! Wolley Dod 908! Constantiaberg, Wolley Dod 2262! Hout Bay, Compton! Muizenberg, Caporn! Klaver Valley, Levyns 5522! 5523! Cape Point, Michell!

Stellenbosch : Niven! Galpin 10611! Sir Lowry's Pass, Levyns 4861! Caledon : Steenbras, Moss and Rogers 1583! Elgin, C. A. Smith 2561! 5668! Moss and Rogers 1526! Bot River, Salter 5186! Shaw's Mountain, Levyns 3529! 5401! Hermanus, Marloth 11909! Genadendal, Burchell 7641! Greyton, Levyns 4867! Bredasdorp : Levyns 3526! Swellendam : Mund! Riversdale : Muir 2545! Garcia's Pass, Mrs. Luyt! Albany : Round Hill, Bolus 10641!

Without precise locality : Roxburgh! Zeyher 909! Harvey 30!

Note.—For a discussion of variability in this species see p. 7.

26. Stoebe aethiopica Linn. Sp. Pl., p. 831 (1753). Lam. III, t. 722 (1791). Thunb. Fl. Cap. ed. Schultes, p. 725 (1823). Less. Syn. Comp., p. 347 (1832). DC. Prod. VI, p. 260 (1837). Harv. in Fl. Cap. III, p. 280 (1865). *Stoebe phylicoides* Thunb. Prod., p. 169 (1800). Thunb. Fl. Cap. ed. Schultes, p. 726 (1823). Less. Syn. Comp., p. 346 (1832). DC. Prod. VI, p. 260 (1837). Harv. Fl. Cap. III, p. 281 (1865). *Seriphium juniperinifolium* Lam. Encycl. I, p. 272 (1783). *Seriphium aethiopicum* Steud. Nom. ed. I, p. 767 (1821).

A shrub, ranging from 40 to 160 cm. in height, the shorter forms being usually copiously branched and the taller forms little branched. *Branches* villous or pubescent, sometimes becoming almost glabrous with age. *Leaves* about 1 cm. long, oblong, subulate-lanceolate or subulate, varying from almost flat and straight to strongly involute, twisted and recurved ; pungent mucronate, woolly above, glabrous or nearly so below. *Capitula* massed in rounded heads, the limit of each capitulum not evident without dissection. The outer *involucral scales* smaller than the inner, somewhat leafy at the tip ; innermost scales scarious, brown-tipped, glabrous or woolly, a little shorter than the floret. *Pappus* of about 18 bristles, slightly joined at the base, shorter than the corolla tube with an external rim of very small scales just outside the bristles. *Corolla* with spreading, triangular lobes, white. *Style* swollen at the base, seated on a waxy disc. *Ovary* glabrous. *Achene* glabrous or nearly so.

Flowering season. September—March (Chiefly September to November).

Van Rhynsdorp : Giftberg, Drege! E. P. Phillips 7348! 7613! Clanwilliam : Nardouw Kloof, Salter 3619! Pillans 7075! Pakhuis Pass, Salter 1671! Levyns 5054! Cederberg, Bolus 14478! Levyns 2226! Ezelsbank, Drege! Kromme Rivier, Bolus 5693! Leighton (21409 in Bolus Herb.)! Boontjes River, Schlechter 8673! Clanwilliam, Leipoldt! Olifant's River, Marloth 2652! PIQUETBERG : Grey's Pass, Levyns 1369! near Piquetberg, Bolus 8496! CERES : Eland's Kloof, Cold Bokkeveld, Levyns 4917! 5112! TULBAGH : Great Winterhoek, E. P. Phillips 1769! PAARL : French Hoek, E. P. Phillips 1162! STELLENBOSCH : Sir Lowry's Pass, Burchell 8202! Hottentots Holland, Mund 26! CAPE : Constantia, Ecklon! Table Mountain, Ecklon 751! Burchell 614! Drege! Kirstenbosch, Ecklon and Zeyher! Orange Kloof, Wolley Dod 2141! Devil's Peak, MacOwan 545! Camps Bay, Levyns 5298! Claremont, Salter 280/4A! Flats, Wallich 235! Klaver Valley, Salter 280/4B! Simon's Bay, C. Wright! WORCESTER : Matroosberg, E. P. Phillips 1913! Pietermeintjies, Marloth 9975! ROBERTSON : Wilde Paardeberg, Stokoe 2749! CALEDON : Elgin, Levyns 3322! Donker Hoek Mountain, Burchell 7976! SWELLENDAM : Barrydale, Barnard (32715 in South African Museum)! RIVERSDALE : near Zoutmelk's Rivier, Burchell 6664! PRINCE ALBERT : Zwartberg Pass, Bolus 11540! UNIONDALE : Avontuur, Marloth 10958!

WITHOUT PRECISE LOCALITY : Zeyher! Thom! Niven! Harvey 568! Küntze! Forster! Forsyth! Lindley!

Note.—See p. 9 for a discussion of this species.

27. STOEBE ROSEA Wolley Dod in Journ. Bot., p. 399 (1901). *S. Pentheri* O. Hoffmann in Ann. Nat. Hofmus, Wien. XXIV, p. 302 (1910).

A much branched shrub, about 50 cm. high, densely leafy. *Stem* entirely hidden by the leaves when young. *Leaves* ericoid, mucronate, keeled, twisted, patent or slightly reflexed, about 6 mm. long, the lower surface slightly woolly when young, glabrous later. *Capitula* massed in dense, rounded terminal heads. Outer *involucral bracts* shorter than the inner, leafy and woolly at the apex, scarious below ; inner involucral bracts scarious, acute, shorter than the floret. *Pappus* of numerous feathered bristles, each with radial symmetry, united for some distance at the base, about as long as the corolla. *Corolla* cylindrical below, becoming more or less globose above, with short, incurved, triangular lobes, pink in colour. *Style* slightly swollen at the base, disc absent, or minute. *Achene* covered with rather shaggy, upwardly directed hairs.

Flowering season. January to March.

CAPE : Muizenberg, Herm. Bolus! Bolus 3915! N. Pillans 8046 in Bolus Herb.! Penther 1151! Salter 2994! Simonsberg, Wolley Dod 273! Klasjagersberg, Wolley Dod 2417! Klaver Valley, Salter 1945! Redhill, Grey!

28. STOEBE BRUNIADES Levyns nom. nov. *Perotriche tortilis* Cass. in Bull. Soc. Philom., p. 75 (1818). Less Syn. Comp., p. 253 (1832). DC. Prod. VI, p. 264 (1837). Harv. in Fl. Cap. III, p. 285 (1865). *Gymnachaena bruniades* Reichb, in Sieb. Pl. Cap. exs., n. 23.

A low, branched shrub of somewhat spreading habit, up to 40 cm. high. Young stems woolly. *Leaves* linear-subulate, strongly involute, twisted, aristate-mucronate, lower surface cobwebby, glabrescent. *Capitula* massed in dense rounded or oblong heads, at the ends of the branches, up to 8 mm. in diam. *Involucral bracts* in few rows, not very different in length, the outermost slightly shorter, somewhat leafy and woolly, the innermost brown, scarious, mucronate, a little longer than the corolla tube. *Pappus* O. *Corolla* about 2 mm. long, with ovate, spreading lobes, about one third the length of the tube, usually pink, sometimes white in colour. *Style* swollen at the base, seated on a waxy disc. *Ovary* glabrous. *Achene* not seen.

Flowering season. February to April.

CAPE : Tygerberg, Salter! Devil's Peak, Pappe! Bolus 7165! Guthrie 973! Levyns 4942! STELLENBOSCH : Galpin 10611! CALEDON : Genadendal, Burchell 7974! near Ganzekraal, Burchell 7562! Caledon, O. Küntze!

WITHOUT LOCALITY : Ecklon! Harvey!

29. STOEBE MONTANA Schlechter ex Levyns. *Suffrutex* humilis, ramosissimus, expansus. *Folia* linearia, involuta, torta, obtusa. *Capitula* in glomerulis parvis, terminalibus. *Bracteae* interiores sub-acutae. *Pappus* O. *Corolla* rosea, segmentis triangulatis, patentibus. *Styli* base sub-turgidi, in disco cereo sedentes.

A small, much branched undershrub about 12 cm. high, of somewhat spreading habit. *Leaves* about 2 mm. long, linear, involute, twisted, thickened towards the apex, very obtuse ; woolly, glabrescent below. *Capitula* in small rounded heads at the ends of the branches, about 5 mm. in diam. *Involucral bracts* in few rows, two or three of the outermost leafy and woolly, the innermost brown, scarious, somewhat acute, as long as the corolla tube. *Pappus* O. *Corolla* 2·5 cm. long with spreading lobes about one quarter the length of the tube, pink in colour. *Style* slightly swollen at the base, seated on a waxy disc. *Ovary* glabrous. *Achene* not seen.

Flowering season. January.

CERES : Gydouwberg, 5,800 ft.. Schlechter 10233! (The type.)

30. Stoebe schultzii Levyns nom. nov. *Perotriche microphylla* Sch. Bip. in Pollichia XVIII—XIX, p. 181 (1861).

A small, branched shrub about 30 cm. high. *Branches* long and whip-like. *Leaves* ovate, under 2 mm. long, adpressed and overlapping closely, somewhat obtuse, with a depression over the midrib on the lower surface, glabrescent on the lower surface. *Capitula* grouped in rounded, terminal heads from 5-10 mm. in diam., each capitulum in the axil of a somewhat leafy bract. *Involucral bracts* usually 3 in number, approximately equal in size, brown, scarious, oblong, obtuse, the outermost most obtuse and with a slightly fimbriate margin. *Pappus* O. *Corolla* 2 mm. in length, with spreading lobes, a little over a third of the length of the tube. *Style* with a swollen base, seated on a waxy disc. *Ovary* about 0 ·6 mm. long glabrous, narrowed at the base, with a minutely toothed annulus. *Achene* not seen.

Flowering season. October to December.

Bredasdorp : near Elim, Bolus 6910! Swellendam : Zoetendal's Valley, Krauss!

31. Stoebe salteri Levyns sp. n. *Suffrutex* humilis, ramosus. *Caules* flagelliformes. *Folia* lanceolata, adpressa, obtusa vel sub-acuta, infra glabrescentia. *Capitula* in glomerulis terminalibus. *Bracteae* interiores oblongae, obtusae, apice fimbriatae. *Pappus* O. *Corolla* alba, segmentis triangulatis, patentibus. *Styli* base turgidi, in disco cereo sedentes.

A small, branched undershrub, up to 15 cm. high with delicate, whip-like branches. *Leaves* lanceolate, under 2 mm. in length, closely investing the stem but not obscuring it completely, obtuse, or subacute, glabrescent on the lower surface. *Capitula* in rounded heads at the ends of the branches, 3 mm. in diam. *Involucral bracts* in few rows, the outermost leafy and woolly, a little shorter than the inner, the innermost brown, scarious, very obtuse, fimbriate towards the apex, about the length of the corolla tube. *Pappus* O. *Corolla* with a tube about 1 mm. long, the lobes spreading, about 0 ·5 mm. in length, white in colour. *Style* with a swollen base, seated on a disc. *Ovary* about 0 ·8 mm. with a minutely toothed annulus, glabrous. *Achene* not seen.

Flowering season. December.

Caledon : 5½ miles South of Caledon, Salter 5149! (the type.)

32. STOEBE GOMPHRENOIDES Berg. Descr. Pl. Cap., p. 336 (1764). Less. Syn. Comp., p. 346 (1832). DC. Prod. VI, p. 259 (1837). Harv. in Fl. Cap. III, p. 280 (1865) ; not of Thunb. Fl. Cap. ed. Schultes, p. 726 (1823). *Seriphium gomphrenoides* Lam. Encycl. I, p. 272 (1791).

A small, erect shrub not much branched. *Leaves* adpressed, elliptic-oblong, concave, about 1 cm. long, obtuse or mucronulate, glabrous on the lower surface, woolly above, ciliate. *Capitula* massed in rounded terminal heads about 2 cm. in diam. *Involucral bracts* cream, a little shorter than the corolla, somewhat acute. *Pappus* of 5 bristles, a little shorter than the corolla. *Corolla* with narrow, erect lobes. *Style* slightly swollen below and seated on a small disc. *Ovary* glabrous, slightly angled. *Achene* not seen.

Flowering season. November.

CAPE : Doornhoogte, Cape Flats, Ecklon!

WITHOUT CERTAIN LOCALITY : Mund! Bowie!

33. STOEBE LEUCOCEPHALA DC. Prod. VI, p. 259 (1837). Harv. Fl. Cap. III p. 280 (1865). *Stoebe squarrosa* Harv. Fl. Cap. III, p. 280 (1865). *Wigandia leucocephala* Sch. Bip. in Pollichia, p. 180 (1861).

An erect or diffuse undershrub. *Branches* canescent. *Leaves* up to 15 mm. long narrow linear, involute, frequently somewhat twisted, both surfaces covered with adpressed, woolly hairs when young, the lower surface becoming glabrous with age. *Capitula* massed in rounded heads. Inner *involucral scales* pure white in colour in the upper part, narrow acute. *Pappus* of about 20 well developed bristles. *Corolla* a deep pink, with narrow, erect lobes, rather less than one third of the length of the tube. *Style* swollen at the base, seated on a waxy disc. *Ovary* covered with a dense felt of hairs.

Flowering season : November to December.

NAMAQUALAND. Middlekraal, Pillans 5606! CALVINIA : Uien Valley, Bokkeveld Mountain, Drege! CLANWILLIAM : Nardouw Mountains, Pearson 5423! Between Pikenier's Kloof and Markuskraal, Drege! MALMESBURY : near Kalabas Kraal, Salter 5100!

WITHOUT LOCALITY : Wallich! Niven!

Note.—Two specimens collected by Wallich have been examined. The one housed at Kew, the type of *S. squarrosa* Harv., differs from the one in the British Museum, named *S. leucocephala*, only in its more lax habit and its longer and more spreading leaves. The difference between the two specimens suggests that the one now at Kew originally grew under conditions of greater shade than the one in the British Museum. The species of this genus are prone to great variation in the leaves, and there seems to be no good reason for retaining *S. squarrosa* Harv.

34. STOEBE MICROPHYLLA DC. Prod. VI, p. 259 (1837) Harv. Fl. Cap. III, p. 280 (1865).

An erect shrub up to about 15 cm. high, with very slender, whip-like branches. *Leaves* minute, tightly adpressed, keeled, acute, glabrous below. *Capitula* in terminal, rounded heads, 1 cm. or a little more in diam. Inner *involucral bracts* white in the upper part, sharply acute. *Pappus* of about 16 bristles, longer than the corolla tube. *Corolla* with rather narrow, erect lobes about one quarter the length of the tube, deep pink in colour. *Style* swollen at the base, seated on a waxy disc. *Ovary* glabrous.

Flowering season. September—March.

MOSSEL BAY : Cloete's Pass, Muir 1455! UNIONDALE : Langkloof, Drege! Avontuur, Fourcade 2077!

DIVISION UNCERTAIN : Klipdrift in the Great Karroo, Schlechter.

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